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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 10

Application Number: 09/290,777
Filing Date: April 13, 1999
Appellant(s): STUTSMAN, DAVID

Peter N. Lalos
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 19, 2001.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1 and 3-20 (specifically, that the group including claims 1 and 3-10 does not stand or fall with the group including claims 11-20) do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

A substantially correct copy of appealed claims 1 and 3-20 appears on pages 16-20 of the Appendix to the appellant's brief. The minor errors are as follows: in claim 1, line 4, “an inner” should be –the inner--; in claim 1, line 5, --and—should be inserted after “to said housing;”; in claim 11, line 9, “said bearing seat” should be –said at least one bearing seat--.

(9) Prior Art of Record

1,761,841	NENNINGER	6-1930

Machinery's Handbook, 25th ed., New York, 1996, pp. 2378-2379

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1 and 3-20 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 1,761,841 (Nenninger) in view of Machinery's Handbook, 25th ed., 1996, pages 2378 and 2379. Nenninger teaches a machine tool spindle 29 (page 1, line 86) that is fixed on one end and allowed to move axially with respect to the rotational axis of the spindle on the other end as the spindle expands and contracts due to variances in temperature (page 2, lines 22-37 and 128-130). The spindle is mounted in a column or housing C (see Figure 1), and is supported with a roller bearing 74 (Figure 5) at one end of the spindle and with bearings 25, 26 (Figure 4) on the opposite end of the spindle. The bearings have inner and outer races (Figures 4 and 5) and are seated against outwardly facing annular surfaces of sleeves 70 and 18, respectively (Figures 4 and 5). The bearing 74 is mounted on the rear of the spindle (page 1, line 62), and floats or axially moves within sleeve 70 (page 2, lines 110-130). Rigid annular sleeve 70 is disposed between bearing 74 and the housing (Figure 5) and is fixed with respect to (or "bonded to") the housing via stud screw 72 (Figure 5 and page 2, lines 114-116). The spindle 29 has a nose 30 that is adapted to engage a cutter arbor or "tool holder" (page 1, column 85-87). As shown in Figure 5, it appears that the bearing seat is slightly oversized with respect to the sleeve 70. Nenninger also specifically teaches that the bearing cone 27 is press fit onto the spindle (page 2,

lines 16-19), and states that the other bearing 74 "floats with the end of the spindle" (page 2, lines 128-129), implying that the bearing 74 is mounted so as to be fixed to the spindle and is thus also press fit onto the spindle. Specifically regarding claim 18, element 75 is a spacer sleeve, and the spacing sleeve 75 is located on the spindle axially between the inner races of bearings 74 and 23, 25, 27 (Figures 4 and 5). Specifically regarding claim 19, nut 77 is threaded onto the spindle (Figure 5). Specifically regarding claim 20, cover plate or cap plate 63 is shown in Figures 2 and 4 as engaging the outer bearing race 23. Specifically regarding claim 12, as shown in Figures 4 and 5, it appears that the annular inner surfaces of the openings which seat the sleeves 70 and 18 are of a slightly larger diameter than the outer diameters of the annular outer surfaces of the sleeves 70 and 18. Specifically regarding claim 13, Nenninger does not specifically teach that the diametral difference is in the range between 0.010 and 0.015 inches. Specifically regarding the seating of the bearings, the bearings 74 and 23, 25, 27 are both seated within enlarged portions of their respective sleeves rather than enlarged portions of the housing (see Figures 4 and 5), and abut against outwardly facing annular surfaces of these sleeves. Nenninger does not teach that the sleeves are held in place via an epoxy resin adhesive, but instead teaches the use of stud screw 72 to fix sleeve 70 as described above, and also teaches the use of washer ring 20 in conjunction with bolts 21, and clamp nut 33 with set screw 34 to fix sleeve 18 (see Figure 4). Specifically regarding the enlarged portion of the seat, it is immaterial to the function of Nenninger's invention as to whether the lips or flanges which form the outwardly facing annular surfaces are part of the sleeve, or whether these flanges are separate from the sleeves and are integral with the housing C (which if these flanges are integral with the housing, these flanges form enlarged openings within the housing by virtue of the smaller

opening at the radially inner surfaces of the flanges). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the flanged portions of the sleeves integral with the housing, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. Howard v. Detroit Stove Works, 150 U.S. 164 (1893). Specifically regarding the epoxy resin adhesive, Machinery's Handbook, 25th ed., 1996, pages 2378 and 2379 teaches the use of "epoxy resin adhesive" to bond metal to metal, and further teaches that appropriate "curing parameters" are selected based on the intended use of the adhesive. Machinery's Handbook further teaches the benefits of such adhesives over mechanical fastening devices. Particularly note page 2378, paragraphs 1 and 2, which states:

> "Joining materials with adhesives offers significant benefits compared with mechanical methods of uniting two materials.
>
> Among these benefits are that an adhesive distributes a load over an area rather than concentrating it at a point, resulting in a more even distribution of stresses. The adhesive bonded joint is therefore more resistant to flexural and vibrational stresses than, for example, a bolted, riveted, or welded joint. Another benefit is that an adhesive forms a seal as well as a bond. This seal prevents the corrosion that may occur with dissimilar metals, such as aluminum and magnesium, or mechanically fastened joints, by providing a dielectric insulation between the substrates. An adhesive also joins irregularly shaped surfaces more easily than does a mechanical fastener. Other benefits include negligible weight addition and virtually no change to part dimensions or geometry."

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied epoxy resin adhesive (rather than the fixing arrangement utilizing the stud screw 72 described by Nenninger) to one or both of the outer surface of the fixed sleeves 70 and 18 taught by Nenninger, or the inner surface of the housing taught by Nenninger, to fix the sleeves with respect to the housing, and to have let this adhesive set (or "cure" as taught by the Machinery's Handbook) for the purpose of providing Nenninger's device

with a load that is distributed over an area rather than concentrating it at a point, resulting in a more even distribution of stresses, or for providing a joint that is more resistant to flexural and vibrational stresses as taught by Machinery's Handbook. Specifically regarding claim 13, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the inner annular surface of the housing as much larger than the outer surface of the sleeve as was desired or expedient, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

(11) Response to Argument

Group I

Applicant has asserted that the Nenninger reference does not teach that the housing itself defines the bearing seat, but instead teaches a bushing member that defines the bearing seat. Applicant specifically asserts that:

> "A portion .of the bushing member is what defines the bearing seat (Nenninger Figure 5, item 73), not the housing. The portion of Nenninger which is the bearing seat according to the Examiner is really an aperture for fitting the bushing member (Nenninger Figure 5, item 71). The aperture in the housing does not define a bearing seat, it merely provides a location to place the bushing member. Further, the aperture and bushing member would necessarily require precision machining in order to maintain perfect axial alignment of the spindle and bearings which is precisely what Applicant's invention seeks to avoid."

However, regarding the broadest reasonable interpretation of the term "bearing seat" set forth in the present claims, note that claim 1 merely sets forth "a housing having at least one bearing seat" and "a bearing having an inner race and an outer race disposed in said at least one bearing seat". Relating this language to the invention described by Nenninger, any element within which the inner and outer races of Nenninger's bearing 74 are "disposed" that is also connected to the

housing C would constitute the claimed "seat". First note that the bearing 74 is mounted on the rear of the spindle (page 1, line 62), and floats or axially moves within sleeve 70 (page 2, lines 110-130). Secondly, note that rigid annular sleeve 70 is disposed between bearing 74 and the housing (Figure 5) and is fixed with respect to (or "bonded to") the housing via stud screw 72 (Figure 5 and page 2, lines 114-116). Thus, the sleeve 70 is connected to the housing, and the portions of the sleeve 70 which contact the bearing 74 constitute the claimed bearing seat set forth in for example, claim 1.

Regarding applicant's assertion mentioned above that the "aperture and bushing member would necessarily require precision machining in order to maintain perfect axial alignment of the spindle and bearings", it is unclear how Applicant is attempting to thus differentiate the claimed present invention from the applied prior art. Note that in the presently invention, there are no limitations regarding "precision machining", and although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Additionally note that the disclosed present invention also includes a housing 11 (Figures 1-2) having an "aperture" (for example, section 14 shown in Figure 3) with a sleeve or "bushing member" 17 located therein (Figure 3, and page 4, last four lines through page 5, line 7), and thus it is further unclear how Applicant is attempting to differentiate the "aperture and bushing member" of the applied prior art from the present invention.

On page 12, bottom paragraph, Applicant asserts:

> "[i]n contrast, the screw attached to the sleeve in Nenninger cited by the Examiner only locks the sleeve in its place, to prevent it from spinning with the spindle (Nenninger col. 4, lines 113-116). This definition of lock is stated in other embodiments of the spindle structure where other screws are used to lock the sleeve and prevent it from rotating,

> while at the same time allowing for the sleeve to move laterally along the axis of the spindle (Nenninger col. 3, lines 40-44)."

Firstly, it is unclear what portion of Nenninger that Applicant is citing via the notations "col. 4, lines 113-116" and "col. 3, lines 40-44". If Applicant meant –page—instead of "col.", it is noted that there are no lines 113-116 on page 4. However, it will be assumed for the purpose of this analysis that Applicant began at the beginning of the document and called the left column of page 1 "col. 1" and called the right col. of page 1 "col. 2", and so on. That being said, it is noted that the embodiment taught by Nenninger to which Applicant makes reference where the sleeve moves "laterally along the axis of the spindle" was not relied upon in the applied art rejection as teaching the presently claimed invention.

Applicant has further asserted at the bottom of page 12 that "[t]he Examiner's combination of the *Machinery's Handbook* and Nenninger merely provides for a replacement of screw with an adhesive, to prevent the bushing member from rotating". Firstly, it is noted that while the screw taught by Nenninger would indeed act to prevent the bushing member from rotating, the adhesive described by the present invention would inherently function to do the same thing, i.e., the adhesive of the present invention would also serve to prevent the sleeve from rotating. Secondly, it is noted that the rejection based on Nenninger and the Machinery's Handbook does not set forth "preventing the bushing member from rotating" as a motivation for combining the two references as implied by Applicant, but instead relies on specific reasons taught by the Machinery's Handbook for utilizing an adhesive instead of a mechanical fastener to fasten two objects together. Particularly note page 2378, of Machinery's Handbook, paragraphs 1 and 2, which states:

"Joining materials with adhesives offers significant benefits compared with mechanical methods of uniting two materials.

Among these benefits are that an adhesive distributes a load over an area rather than concentrating it at a point, resulting in a more even distribution of stresses. The adhesive bonded joint is therefore more resistant to flexural and vibrational stresses than, for example, a bolted, riveted, or welded joint. Another benefit is that an adhesive forms a seal as well as a bond. This seal prevents the corrosion that may occur with dissimilar metals, such as aluminum and magnesium, or mechanically fastened joints, by providing a dielectric insulation between the substrates. An adhesive also joins irregularly shaped surfaces more easily than does a mechanical fastener. Other benefits include negligible weight addition and virtually no change to part dimensions or geometry."

Applicant further asserts that the applied prior art does not "disclose a sleeve between the bearing seat and the bearings to provide perfect axial alignment between the spindle and the bearings, rather both only disclose a bushing member containing a bearing seat bonded with an adhesive to a housing with no sleeve between the bearing seat and the bearings" (top of page 13). Regarding the "to provide perfect axial alignment", it is noted that there is no limitation regarding "perfect" axial alignment and that as previously stated, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, it is noted that if applicant is asserting that Applicant's reason for using an adhesive rather than a screw is different than the reason taught by Machinery's Handbook for doing so (i.e., for the reason of providing "perfect axial alignment"), the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Regarding the assertion that Nenninger in view of Machinery's Handbook teaches "a bushing member containing a bearing seat bonded with an adhesive to a housing with no sleeve between the bearing seat and the bearings", as

previously described above in both the above rejection and the detailed analysis of the present claim language, regarding the broadest reasonable interpretation of the term "bearing seat" set forth in the present claims, note that claim 1 merely sets forth "a housing having at least one bearing seat" and "a bearing having an inner race and an outer race disposed in said at least one bearing seat". Relating this language to the invention described by Nenninger, any element within which the inner and outer races of Nenninger's bearing 74 are "disposed" that is also connected to the housing C would constitute the claimed "seat". First note that the bearing 74 is mounted on the rear of the spindle (page 1, line 62), and floats or axially moves within sleeve 70 (page 2, lines 110-130). Secondly, note that rigid annular sleeve 70 is disposed between bearing 74 and the housing (Figure 5) and is fixed with respect to (or "bonded to") the housing via stud screw 72 (Figure 5 and page 2, lines 114-116). Thus, the sleeve 70 is connected to the housing, and the portions of the sleeve 70 which contact the bearing 74 constitute the claimed bearing seat set forth in for example, claim 1. That being said, furthermore, regarding the enlarged section as specifically set forth in the above rejection, it is immaterial to the function of Nenninger's invention as to whether the lips or flanges which form the outwardly facing annular surfaces are part of the sleeve, or whether these flanges are separate from the sleeves and are integral with the housing C (which if these flanges are integral with the housing, these flanges form enlarged openings within the housing by virtue of the smaller opening at the radially inner surfaces of the flanges). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the flanged portions of the sleeves integral with the housing, since it has been held that forming in one piece an article which has formerly been

formed in two pieces and put together involves only routine skill in the art. Howard v. Detroit Stove Works, 150 U.S. 164 (1893).

Regarding Applicant's assertion that neither Nenninger nor Machinery's Handbook teach "permanently securing the bushing member via bonding adhesive, rather, the *Machinery's Handbook* only discloses replacing a screw with a bonding material" (page 13, top), it appears that Applicant is asserting that the "bonding material" taught by Machinery's Handbook is not a "bonding adhesive". However, as described in the above rejection, specifically regarding the epoxy resin adhesive, Machinery's Handbook, 25th ed., 1996, pages 2378 and 2379 teaches the use of "epoxy resin adhesive" to bond metal to metal, and further teaches that appropriate "curing parameters" are selected based on the intended use of the adhesive. Machinery's Handbook further teaches the benefits of such adhesives over mechanical fastening devices. Particularly note page 2378, paragraphs 1 and 2, which states:

> "Joining materials with adhesives offers significant benefits compared with mechanical methods of uniting two materials.
>
> Among these benefits are that an adhesive distributes a load over an area rather than concentrating it at a point, resulting in a more even distribution of stresses. The adhesive bonded joint is therefore more resistant to flexural and vibrational stresses than, for example, a bolted, riveted, or welded joint. Another benefit is that an adhesive forms a seal as well as a bond. This seal prevents the corrosion that may occur with dissimilar metals, such as aluminum and magnesium, or mechanically fastened joints, by providing a dielectric insulation between the substrates. An adhesive also joins irregularly shaped surfaces more easily than does a mechanical fastener. Other benefits include negligible weight addition and virtually no change to part dimensions or geometry."

In the event that Applicant is also asserting that the applied art does not teach that the adhesive is used to "permanently" secure the bushing member, it is noted that a "permanent" bond is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant has further asserted (page 13) the following:

> "Further, the Nenninger spindle mounting arrangement has been known for 70 years and metal to metal bonding has been known for at least 50 years, yet no one prior to Applicant has sought to apply the purported teachings of any metal to metal adhesive reference to the cited Nenninger arrangement to arrive at Applicant's claimed invention."

However, contentions that the reference patents are old are not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. See *In re Wright*, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977).

Additionally regarding Group I, Applicant has asserted the following:

> "In summary, because Nenninger and the *Machinery's Handbook* do not disclose all the limitations or teach a combination to arrive at Applicant's invention, the rejection of claims 1 and 3-10 should not be sustained."

However, as described in the above rejection based on Nenninger and the Machinery's Handbook, as well as in the further explanation provided above, the combination of the Nenninger patent and the Machinery's Handbook do teach all of the limitations of the present claims and also teach a combination to arrive at Applicant's invention as set forth in claims 1 and 3-10.

Group II

Applicant has asserted that it would not be obvious to modify Nenninger with the Machinery's Handbook teaching as set forth in the above rejection based thereon to arrive at the invention in claims 11-20 because "Nenninger does not disclose a housing defining a bearing seat" (page 13 of Applicant's arguments). However, as described in the above rejection based

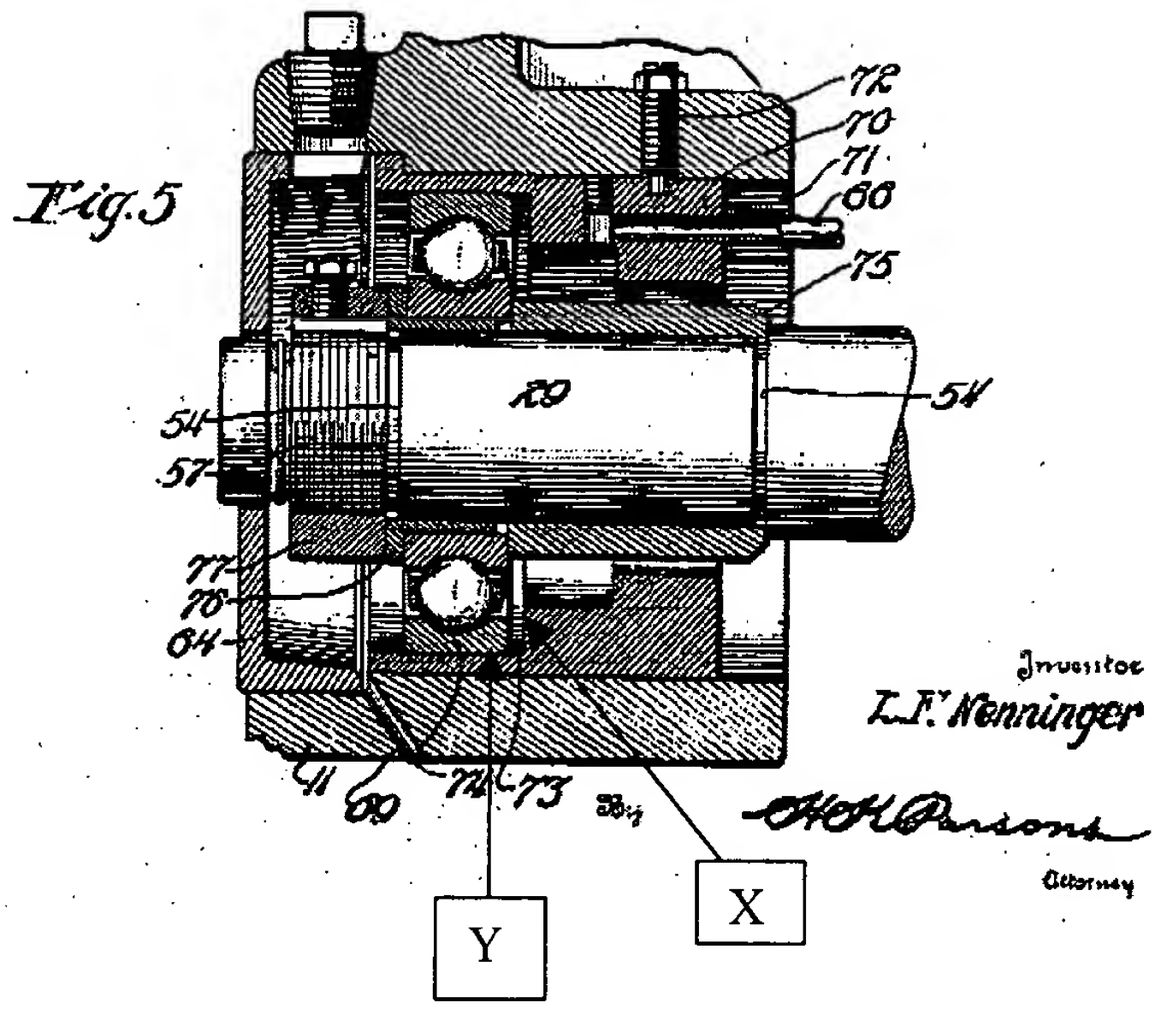
thereon, Nenninger teaches that bearings 74 and 25, 26, which have inner and outer races (Figures 4 and 5), are seated against outwardly facing annular surfaces of sleeves 70 and 18, respectively (Figures 4 and 5). Additionally, regarding the broadest reasonable interpretation of the term "bearing seat" set forth in the present claims, note that claim 11 merely sets forth "forming at least one bearing seat in a housing", "applying an adhesive bonding material to at least one of a surface of said sleeve and a surface of said at least one bearing seat", and "mounting said spindle with said bearing and said sleeve, on said housing so that said surface of said sleeve is disposed adjacent to said surface of said at least one bearing seat with said adhesive bonding material adjoining said surfaces". Relating this language to the invention described by Nenninger, any element within a housing C having a surface adhesively bonded to a sleeve surface would constitute the claimed "bearing seat". Nenninger, teaches that the housing has a bore within which rigid annular sleeve 70 is disposed (Figure 5), and teaches that the sleeve 70 has mounted therewithin a bearing 74 mounted on the rear of spindle 29 (page 1, line 62, Figure 5, and page 2, lines 110-130), which bearing floats or moves axially within sleeve 70 (page 2, lines 110-130). Note that the rigid annular sleeve 70 is fixed with respect to the housing via stud screw 72 (Figure 5 and page 2, lines 114-116). As asserted in the above rejection, it would be obvious to replace the screw 72 with an adhesive as taught by the Machinery's Handbook as Machinery's Handbook specifically teaches the benefits of adhesives over mechanical fastening devices. Particularly note page 2378, paragraphs 1 and 2, which states:

> "Joining materials with adhesives offers significant benefits compared with mechanical methods of uniting two materials.
>
> Among these benefits are that an adhesive distributes a load over an area rather than concentrating it at a point, resulting in a more even distribution of stresses. The adhesive bonded joint is therefore more resistant to flexural and vibrational stresses than, for example, a bolted, riveted, or welded joint. Another benefit is that an adhesive forms

> a seal as well as a bond. This seal prevents the corrosion that may occur with dissimilar metals, such as aluminum and magnesium, or mechanically fastened joints, by providing a dielectric insulation between the substrates. An adhesive also joins irregularly shaped surfaces more easily than does a mechanical fastener. Other benefits include negligible weight addition and virtually no change to part dimensions or geometry."

As the screw 72 is used in Nenninger to fix the inner surface of the previously described housing bore and the outer surface of the annular sleeve 70, such adhesive would be placed between these two surfaces. Thus, the inner surface of the housing bore would constitute a "bearing seat" as set forth in claim 11. Additionally, a specific bearing seat is set forth in claim 16, for example, where the housing has "an opening therethrough with spaced, first and second enlarged sections providing outwardly facing annular seating surfaces and annular side walls" and also that the spindle has "an annular seating surface so that an inner race of said first bearing seats on said annular seating surface". Specifically relating this language to Nenninger, note firstly regarding the "enlarged sections" that, as described in the above rejection, it is immaterial to the function of Nenninger's invention as to whether the lips or flanges which form the outwardly facing annular surfaces are part of the sleeve, or whether these flanges are separate from the sleeves and are integral with the housing C (which if these flanges are integral with the housing, these flanges form enlarged openings within the housing by virtue of the smaller opening at the radially inner surfaces of the flanges). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the flanged portions of the sleeves integral with the housing, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. Howard v. Detroit Stove Works, 150 U.S. 164 (1893). Secondly, note that sleeve 70 has an "outwardly facing annular surface", labeled in the reproduction of Figure 5 shown

below as "X". Additionally, sleeve 70 has an "annular side wall", labeled in the reproduction of Figure 5 shown below as "Y".



Note that as the bearing "floats" axially, (or in the left/right direction as viewed in Figure 5), it will seat against the aforementioned annular surface, and that the outer race slides within the sleeve 70 (Fig. 5) against the aforedescribed "annular side wall", which annular surface and annular side wall thus constitute the claimed "seat". Regarding the spindle itself having an "annular seating surface" such that "an inner race of said first bearing seats on said annular surface of said spindle", note that as viewed in Figure 5, the spindle 29 has a bushing 76 as well as a sleeve 75 mounted thereon, and that the inner race of bearing 74 contacts both of these (see Figure 5), and thus either of bushing 76 or 75 could constitute the "annular seating surface".

Regarding Applicant's further assertions regarding the lack of a "seat" as claimed, which assertions are found on page 14, paragraph beginning "Another step…", attention is directed to the preceding analysis as it equally applies to these assertions.

Applicant has also asserted the following:

> "Further, although the Machinery's Handbook does teach that metal to metal adhesive bonding and the benefit of distributing load over an area rather than a concentrated area, it does not teach of dispensing with the precision machining and grinding of a bearing seat as would be required by Nenninger. Also, neither Nenninger nor the *Machinery's Handbook* teach of a method of obtaining concentricity of the spindle mounted in a bearing while dispensing with such precision machining and grinding."

However, it is noted that the features upon which applicant relies (i.e., any steps regarding "machining and grinding" of a bearing seat, nor the precision thereof, nor any steps regarding the "concentricity" of the spindle) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, it is noted that if applicant is asserting that Applicant's reason for using an adhesive rather than a screw is different than the reason taught by Machinery's Handbook for doing so (i.e., for the reason of assuring "concentricity and axial alignment", Applicant's arguments, top of page 15, for example), the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Additionally regarding Group II, Applicant has asserted the following:

> "As Nenninger and the *Machinery's Handbook* fail to disclose features necessarily created by the steps of Applicant's invention and do not disclose the method or teach the

combination to arrive at the method of Applicant's invention, the rejection of claims 11-20 should not be sustained."

However, as described in the above rejection based on Nenninger and the Machinery's Handbook, as well as in the further explanation provided above, the combination of the Nenninger patent and the Machinery's Handbook do teach all of the limitations of the present claims and also teach a combination to arrive at Applicant's invention as set forth in claims 11-20.

For the above reasons, it is believed that the rejections should be sustained.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Attachment for PTO-948 (Rev. 03/01, or earlier)
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein Identifying indicia, if provided, should include the title of the invention inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application If this information is provided, it must be placed on the front of each sheet and centered within the top margin If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability Extensions of time may NOT be obtained under the provisions of 37 CFR 1 136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed No changes will be permitted to be made other than correction of informalities, unless the examiner has approved the proposed changes

Timing of Corrections

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication See 37 CFR 1.85(a)

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application